

**YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT**

1947 Galileo Court, Suite 103, Davis, CA 95618

**Diesel Fired Internal Combustion Engine  
Emission Evaluation****ENGINEER:**

Courtney Graham

ATC # C-10-67

PTO # P-12-11 (reserved)

SIC Code # 4911

UTM E 609.7 km

UTM N 4283.2 km

**COMPANY NAME:**

Woodland Biomass Power Ltd.

**ENGINE LOCATION:**

The equipment will be located at 1786 East Kentucky Avenue in Woodland. The equipment will not be located within 1,000 feet of a K-12 school and is not subject to the requirements of H&S 42301.6.

**FACILITY DESCRIPTION:**

Woodland Biomass Power Ltd., is a biomass fuel fired circulating fluidized bed

**PROPOSAL:**

The facility is proposing to permit a portable diesel powered grinder for intermittent operation at the site. However, because the facility rents grinders from an outside vendor, there are several different grinders that may potentially operate under the proposal, depending on which grinder that the vendor has available. For this reason, the evaluation and permit will reflect a less-specific equipment description, but the most conservative assumptions.

**PROCESS:**

Limited use diesel-fired IC engine powering a grinder.

**FLOW DIAGRAM:**

None required.

**EQUIPMENT:**

1,000 BHP (maximum) diesel fired IC engine, EPA Certified Tier II engine

**CONTROL EQUIPMENT:**

Aftercooler and turbocharger

**APPLICATION DATA:**

<u>Operating Schedule</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Max. Daily Operation =	12 hours/day	Td	Applicant
Max. 1st Quarter Operation =	100 hours/quarter	T1	Applicant
Max. 2nd Quarter Operation =	100 hours/quarter	T2	Applicant
Max. 3rd Quarter Operation =	100 hours/quarter	T3	Applicant
Max. 4th Quarter Operation =	100 hours/quarter	T4	Applicant
Max. Yearly Operation =	400 hours/year	Ty	Applicant

**Wood Processing Limits**

Daily Limit =	1,500 tons	Tdw	Applicant
1st Quarter Limit =	12,500 tons	T1w	Applicant
2nd Quarter Limit =	12,500 tons	T2w	Applicant
3rd Quarter Limit =	12,500 tons	T3w	Applicant
4th Quarter Limit =	12,500 tons	T4w	Applicant
Yearly Limit =	50,000 tons	Tyw	Applicant

<u>Engine Data</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Maximum BHP Rating =	1000 BHP	HP	Manufacturer's Data
Exhaust Volume =	5,283 ACFM	EV	Manufacturer's Data
Exhaust Temperature =	1,425 Degrees Rankine (F+460)	ET	Manufacturer's Data
Hourly Fuel Consumption =	50.3 Gallons	FT	Manufacturer's Data

**ASSUMPTIONS:**

	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Sulfur Content of Fuel =	0.0015 %	SC	CARB Certified Diesel
Standard Temperature =	528 Degrees Rankine (F+460)	ST	STAPPA-ALAPCO, Pg. 1-7 (5/30/91)
Moisture Content =	10 %	PM	STAPPA-ALAPCO, Pg. 1-7 (5/30/91)
BTU Content =	19,300 BTU/lb	BC	AP-42, Table 3.4-1(a) (10/96)
Density =	7.1 lb/gallon	DE	AP-42, Table 3.4-1(a) (10/96)

<u>Diesel Particulate Control</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Particulate Controls =	No		Applicant
Baseline Reduction =	0 %	CE	Manufacturer's Data

<u>EMISSION FACTORS:</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
<b>Combustion Factors:</b>			
VOC =	1.00 g/bhp-hr	EFvoc	Manufacturer's Data
CO =	2.60 g/bhp-hr	EFco	Tier II Standard
NOx =	4.80 g/bhp-hr	EFnox	Tier II Standard
SOx =	0.0055 g/bhp-hr	EFsox	AP-42, Table 3.4-1 (10/96) *
TSP/PM10 =	0.15 g/bhp-hr	EFpm	Tier II Standard
<b>Grinding Factor:</b>			
TSP/PM10 =	0.0168 lb/ton	EFpmG	Applicant

\* Only the emission factor listed in Table 3.4-1 is used since it assumes all fuel bound sulfur is converted to SOx.

\*\* All particulate matter is assumed to be less than 1 micrometer aerodynamic diameter (AP-42, Section 3.3).

#### CALCULATIONS:

##### 1. Determine the Maximum HP-Hr limits\*:

		<u>Formula Symbol</u>
Daily Limit = Td * HP =	12,000 HP-Hrs	Hd
1st Quarter Limit = T1 * HP =	100,000 HP-Hrs	H1
2nd Quarter Limit = T2 * HP =	100,000 HP-Hrs	H2
3rd Quarter Limit = T3 * HP =	100,000 HP-Hrs	H3
4th Quarter Limit = T4 * HP =	100,000 HP-Hrs	H4
Yearly Limit = Ty * HP =	400,000 HP-Hrs	Hy

\*The applicant has requested to be limited on the permit in terms of hp-hrs for additional flexibility.

##### 2. Determine Dry Standard Cubic Feet of Exhaust:

$$\text{DSCFM Exhaust} = \text{EV} * \text{ST/ET} * (100\% - \text{PM}) = 1,761.7 \text{ dscfm} \quad \text{SCFM}$$

##### 3. Determine Yearly MMBtu combusted in Engine for Toxics:

$$\text{Yearly MMBtu} = \text{Ty} * \text{FT} * \text{DE} * \text{BC} * (1 \text{ MMBtu}/1,000,000 \text{ Btu}) = 2,757.0 \text{ MMBtu/year}$$

#### EMISSION CALCULATIONS:

##### 1. Determine the Combustion Emissions:

###### VOC Combustion Emissions:

Max Daily VOC Emissions = Hd * EFvoc * (1 lb/453.6 g) =	26.5 lb/day
1st Quarter VOC Emissions = H1 * EFvoc * (1 lb/453.6 g) =	220 lb/quarter
2nd Quarter VOC Emissions = H2 * EFvoc * (1 lb/453.6 g) =	220 lb/quarter
3rd Quarter VOC Emissions = H3 * EFvoc * (1 lb/453.6 g) =	220 lb/quarter
4th Quarter VOC Emissions = H4 * EFvoc * (1 lb/453.6 g) =	220 lb/quarter
Max Yearly VOC Emissions = Hy * EFvoc * (1 lb/453.6 g) * (1 ton/2,000 lb) =	0.44 tons/year

###### CO Combustion Emissions:

Max. Daily CO Emissions = Hd * EFco * (1 lb/453.6 g) =	68.8 lb/day
1st Quarter CO Emissions = H1 * EFco * (1 lb/453.6 g) =	573 lb/quarter
2nd Quarter CO Emissions = H2 * EFco * (1 lb/453.6 g) =	573 lb/quarter
3rd Quarter CO Emissions = H3 * EFco * (1 lb/453.6 g) =	573 lb/quarter
4th Quarter CO Emissions = H4 * EFco * (1 lb/453.6 g) =	573 lb/quarter
Max. Yearly CO Emissions = Hy * EFco * (1 lb/453.6 g) * (1 ton/2,000 lb) =	1.15 tons/year

###### NOx Combustion Emissions:

Max. Daily NOx Emissions = Hd * EFnox * (1 lb/453.6 g) =	127.0 lb/day
1st Quarter NOx Emissions = H1 * EFnox * (1 lb/453.6 g) =	1058 lb/quarter
2nd Quarter NOx Emissions = H2 * EFnox * (1 lb/453.6 g) =	1058 lb/quarter
3rd Quarter NOx Emissions = H3 * EFnox * (1 lb/453.6 g) =	1058 lb/quarter
4th Quarter NOx Emissions = H4 * EFnox * (1 lb/453.6 g) =	1058 lb/quarter
Max. Yearly NOx Emissions = Hy * EFnox * (1 lb/453.6 g) * (1 ton/2,000 lb) =	2.12 tons/year

**SOx Combustion Emissions:**

Max. Hourly SOx Emissions = $HP * EF_{sox} * (1 \text{ lb}/453.6 \text{ g}) =$	0.0 lb/hour
Max. Daily SOx Emissions = $Hd * EF_{sox} * (1 \text{ lb}/453.6 \text{ g}) =$	0.1 lb/day
1st Quarter SOx Emissions = $H1 * EF_{sox} * (1 \text{ lb}/453.6 \text{ g}) =$	1 lb/quarter
2nd Quarter SOx Emissions = $H2 * EF_{sox} * (1 \text{ lb}/453.6 \text{ g}) =$	1 lb/quarter
3rd Quarter SOx Emissions = $H3 * EF_{sox} * (1 \text{ lb}/453.6 \text{ g}) =$	1 lb/quarter
4th Quarter SOx Emissions = $H4 * EF_{sox} * (1 \text{ lb}/453.6 \text{ g}) =$	1 lb/quarter
Max. Yearly SOx Emissions = $Hy * EF_{sox} * (1 \text{ lb}/453.6 \text{ g}) * (1 \text{ ton}/2,000 \text{ lb}) =$	0.00 tons/year

**TSP/PM10 Combustion Emissions:**

Max. Hourly TSP/PM10 Ems. = $HP * EF_{pm} * (1 \text{ lb}/453.6 \text{ g}) =$	0.3 lb/hour
Max. Daily TSP/PM10 Ems. = $Hd * EF_{pm} * (1 \text{ lb}/453.6 \text{ g}) =$	4.0 lb/day
1st Quarter TSP/PM10 Ems. = $T1 * EF_{pm} * (1 \text{ lb}/453.6 \text{ g}) =$	33 lb/quarter
2nd Quarter TSP/PM10 Ems. = $T2 * EF_{pm} * (1 \text{ lb}/453.6 \text{ g}) =$	33 lb/quarter
3rd Quarter TSP/PM10 Ems. = $T3 * EF_{pm} * (1 \text{ lb}/453.6 \text{ g}) =$	33 lb/quarter
4th Quarter TSP/PM10 Ems. = $T4 * EF_{pm} * (1 \text{ lb}/453.6 \text{ g}) =$	33 lb/quarter
Yearly TSP/PM10 Ems. = $Ty * EF_{pm} * (1 \text{ lb}/453.6 \text{ g}) * (1 \text{ ton}/2,000 \text{ lb}) =$	0.07 tons/year

**2. Determine Grinding Emissions:****TSP/PM10 Emissions:**

Max. Hourly TSP/PM10 Ems. = $Tdw * EF_{pmG} / Tdh =$	2.1 lb/hour
Max. Daily TSP/PM10 Ems. = =	25.2 lb/day
1st Quarter TSP/PM10 Ems. = =	210 lb/quarter
2nd Quarter TSP/PM10 Ems. = =	210 lb/quarter
3rd Quarter TSP/PM10 Ems. = =	210 lb/quarter
4th Quarter TSP/PM10 Ems. = =	210 lb/quarter
Yearly TSP/PM10 Ems. = =	0.42 tons/year

**3. Determine Total PM10 Emissions:****Total TSP/PM10 Emissions:**

Max. Hourly TSP/PM10 Ems. =	2.4 lb/hour
Max. Daily TSP/PM10 Ems. =	29.2 lb/day
1st Quarter TSP/PM10 Ems. =	243 lb/quarter
2nd Quarter TSP/PM10 Ems. =	243 lb/quarter
3rd Quarter TSP/PM10 Ems. =	243 lb/quarter
4th Quarter TSP/PM10 Ems. =	243 lb/quarter
Yearly TSP/PM10 Ems. =	0.49 tons/year

**4. Determine Particulate Matter Emission Concentration\*:**

$$PM \text{ Conc.} = [PM \text{ lb/hr}] * (7,000 \text{ grains/lb}) * (1 \text{ hr}/60 \text{ min}) * (1/\text{SCFM}) = 0.02 \text{ gr/dscf}$$

\*Since the grinding has no associated flow, only the combustion particulate is included

**5. Determine SOx Emission Concentration:**

$$SOx \% = [SOx \text{ lb/hr}] * (385 \text{ scf/lb-mole}) * (\text{lb-mole}/64 \text{ lb}) * (1 \text{ hr}/60 \text{ min}) * (1/\text{SCFM}) * 100\% = 0.0001 \%$$

**6. Determine Particulate Matter Emission Rate:**

$$PM \text{ Emission Rate} = Ty * HP * EF_{pm} * (1 \text{ year}/8,760 \text{ hrs}) * (1 \text{ hr}/3,600 \text{ sec}) * (100\% - CE) = 0.0019 \text{ grams/sec}$$

**Formula  
Symbol  
ER**

**RULE & REGULATION COMPLIANCE EVALUATION:****District Rule 2.3-Ringelmann**

The version of the rule used in this evaluation is the rule adopted on October 1, 1971, and is part of the California State Implementation Plan (SIP). The source is currently in compliance with the requirements of the rule.

**1. Requirement:** The Permit Holder shall not discharge into the atmosphere from any single source of emission whatsoever, any air contaminant for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:

- As dark or darker in shade as that designated as No. 2 on the Ringelmann Chart as published by the United States Bureau of Mines; or
- Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection a. of this condition. [District Rule 2.3]

**Streamlined Demonstration:** The requirements of the rule can be streamlined by a Rule 3.4, New Source Review condition

**Permit condition:** The Permit Holder shall not discharge into the atmosphere any air contaminant for a period or periods aggregating more than 3 minutes in any one hour which is:

- As dark or darker in shade than No. 1 on the Ringelmann Chart; or
- Greater than 20% opacity. [District Rule 3.4/C-10-67]

#### **District Rule 2.5-Nuisance**

The operation is expected to comply with the rule requirement of no discharge which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or the public. A condition will not be placed on the ATC, but will be added to the PTO upon implementation.

#### **District Rule 2.11-Particulate Matter**

This rule was updated 1/13/10, however the rule has not yet been approved as part of the SIP, therefore the previous (SIP-approved) version was evaluated here.

**1. Requirement:**

<u>Emission Rate (gr/dscf)</u>	<u>Allowable Rate (gr/dscf)</u>	<u>Compliance</u>
0.02	0.3	Yes

#### **District Rule 2.12, Section A-Sulfur Compounds**

This rule was updated 1/13/10, however the rule has not yet been approved as part of the SIP, therefore the previous (SIP-approved) version was evaluated here.

**1. Requirement:**

<u>Emission Rate (% SOx as SO2)</u>	<u>Allowable Rate (% SOx as SO2)</u>	<u>Compliance</u>
0.0001	0.2	Yes

**Streamlined Demonstration:** The above emission rate was calculated using the daily SOx emission limit for Rule 3.4, New Source Review. The Rule 3.4 requirement of 0.0001% will subsume the rule 2.11 requirement of 0.2%.

**Streamlined Condition:** SOx emissions from the process shall not exceed 0.1 lb/day, 1 lb/1st calendar quarter, 1 lb/2nd calendar quarter, 1 lb/3rd calendar quarter, 1 lb/4th calendar quarter, and neg. tons/year. [District Rules 2.11 and 3.4/C-10-58]

#### **District Rule 2.32-Stationary Internal Combustion Engines**

The engine is portable in nature and only comes to the site once or twice per quarter. Therefore, per the applicability section of the rule (section 112), the rule is only applicable to stationary engines, which as defined under section 208 of the rule, does not include engines which are moved in this nature.

#### **District Rule 3.1-General Permit Requirements**

This rule was adopted 2/23/94 and is included in the SIP. The source is in compliance with the requirements of the rule.

**1. Requirement:**

No person shall build, erect, alter, or replace any facility, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants, without first obtaining an authorization to construct from the Air Pollution Control Officer (APCO) as specified in Section 401 of District Rule 3.1. [District Rule 3.1, §301.1]

**2. Requirement:**

No person shall operate any facility, article, machine, equipment, or other contrivance, for which an authorization to construct is required by District Rules and Regulations without first obtaining a written permit from the APCO. [District Rule 3.1, §302.1]

**3. Requirement:**

No person shall operate any facility, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, without obtaining a permit from the APCO or the Hearing Board. [District Rule 3.1, §302.2]

#### 4. Requirement:

The owner or operator of any facility, article, machine, equipment, or other contrivance for which a permit to operate is in effect shall notify the District office whenever a breakdown, malfunction, or operational upset condition exists which would tend to increase emissions of air pollutants or whenever any operating condition contrary to any provision of the permit to operate exists. Such notice shall be given to the District no later than four hours after occurrence during regular workday hours or no later than two hours of the District workday following an occurrence not during regular District workday hours. The notice shall provide the District information as to causes and corrective action being taken, with a schedule for return to required operating conditions. [District Rule 3.1, §405.3]

#### District Rule 3.4-New Source Review

##### PROPOSED EMISSION SUMMARY FOR NEW OR MODIFIED PERMIT

	<u>Daily</u>	<u>Yearly</u>	
VOC	26.5 lb	0.44 tons	Use for annual billing
CO	68.8 lb	1.15 tons	Use for annual billing
NOx	127.0 lb	2.12 tons	Use for annual billing
SOx	0.1 lb	0.00 tons	Use for annual billing
PM10	29.2 lb	0.49 tons	Use for annual billing

	<u>Quarterly</u>			
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	220	220	220	220
CO (lb)	573	573	573	573
NOx (lb)	1,058	1,058	1,058	1,058
SOx (lb)	1	1	1	1
PM10 (lb)	243	243	243	243

##### Previous quarterly potential to emit for modified permit\*

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	0	0	0	0
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

\* This is a new emissions unit, therefore the previous potential to emit (PTE) is zero.

##### Historic potential emissions for modified permit\*

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	0	0	0	0
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

\* This is a new emissions unit, therefore the historic PTE is zero.

<u>Pollutant</u>	<u>Trigger</u> (lb/day)	<u>BACT</u>	<u>Quarterly Increase</u>	<u>BACT Trigger</u>
		<u>Proposed</u> (lb/day)		
VOC	10	26	Yes	Yes
CO	250	69	Yes	No
NOx	10	127	Yes	Yes
SOx	80	0	Yes	No
PM10	80	29	Yes	No

##### OFFSETS

##### Quarterly permitted emissions for other permits at the stationary source\*

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	37,800	38,220	38,640	38,640
CO (lb)	106,920	108,108	109,296	109,296
NOx (lb)	56,808	57,439	58,070	58,070
SOx (lb)	28,512	28,829	29,146	29,146
PM10 (lb)	24,528	24,794	25,058	24,758

\*See attached facility PTE sheet

**Quarterly permitted emissions for the stationary source including proposed emissions**

	<b><u>1st</u></b>	<b><u>2nd</u></b>	<b><u>3rd</u></b>	<b><u>4th</u></b>
VOC (lb)	38,020	38,440	38,860	38,860
CO (lb)	107,493	108,681	109,869	109,869
NOx (lb)	57,866	58,497	59,128	59,128
SOx (lb)	28,513	28,830	29,147	29,147
PM10 (lb)	24,771	25,037	25,301	25,001

**Offset triggers**

	<b><u>1st</u></b>	<b><u>2nd</u></b>	<b><u>3rd</u></b>	<b><u>4th</u></b>
VOC (lb)	7,500	7,500	7,500	7,500
CO (lb)	49,500	49,500	49,500	49,500
NOx (lb)	7,500	7,500	7,500	7,500
SOx (lb)	13,650	13,650	13,650	13,650
PM10 (lb)	13,650	13,650	13,650	13,650

**Quantity of offsets required**

<b><u>Same Source</u></b>	<b><u>1st</u></b>	<b><u>2nd</u></b>	<b><u>3rd</u></b>	<b><u>4th</u></b>
VOC (lb)	220	220	220	220
CO (lb)	573	573	573	573
NOx (lb)	1,058	1,058	1,058	1,058
SOx (lb)	1	1	1	1
PM10 (lb)	243	243	243	243

**Within 15 mile radius**

	<b><u>1st</u></b>	<b><u>2nd</u></b>	<b><u>3rd</u></b>	<b><u>4th</u></b>
VOC (lb)	265	265	265	265
CO (lb)	688	688	688	688
NOx (lb)	1,270	1,270	1,270	1,270
SOx (lb)	1	1	1	1
PM10 (lb)	292	292	292	292

**15 miles<radius<50 miles**

	<b><u>1st</u></b>	<b><u>2nd</u></b>	<b><u>3rd</u></b>	<b><u>4th</u></b>
VOC (lb)	331	331	331	331
CO (lb)	860	860	860	860
NOx (lb)	1,587	1,587	1,587	1,587
SOx (lb)	2	2	2	2
PM10 (lb)	365	365	365	365

**MAJOR MODIFICATION**

**Facility Total Potential to Emit**

66.29 TPY VOC  
187.33 TPY CO  
103.37 TPY NOx  
49.54 TPY SOx  
36.66 TPY PM10

**Major Source Thresholds**

25 TPY VOC  
100 TPY CO  
25 TPY NOx  
100 TPY SOx  
100 TPY PM10

**Last five year emission aggregate**

0.44 TPY VOC  
1.15 TPY CO  
2.12 TPY NOx  
0.00 TPY SOx  
0.49 TPY PM10

**Major Modification Thresholds**

25 TPY VOC  
100 TPY CO  
25 TPY NOx  
40 TPY SOx  
25 TPY PM10

**Result: The proposed modification is not a major modification**

**PUBLIC NOTICE**

**"Increase in historic potential to emit"**

220 lb VOC/quarter  
573 lb CO/quarter  
1,058 lb NOx/quarter  
1 lb SOx/quarter  
243 lb PM10/quarter

**Exemption level for notification**

7,500 lb VOC/quarter  
49,500 lb CO/quarter  
7,500 lb NOx/quarter  
13,650 lb SOx/quarter  
13,650 lb PM10/quarter

**Result: Public notice is not required**

**1. Requirement:**

The VOC emissions from the engine shall not exceed 26.5 lb/day, 220 lb/1st calendar quarter, 220 lb/2nd calendar quarter, 220 lb/3rd calendar quarter, 220 lb/4th calendar quarter, and 0.44 tons/calendar year. [District Rule 3.4/ C-10-67]

**2. Requirement:**

The CO emissions from the engine shall not exceed 68.8 lb/day, 573 lb/1st calendar quarter, 573 lb/2nd calendar quarter, 573 lb/3rd calendar quarter, 573 lb/4th calendar quarter, and 1.15 tons/calendar year. [District Rule 3.4/ C-10-67]

**3. Requirement:**

The NOx emissions from the engine shall not exceed 127.0 lb/day, 1,058 lb/1st calendar quarter, 1,058 lb/2nd calendar quarter, 1,058 lb/3rd calendar quarter, 1,058 lb/4th calendar quarter, and 2.12 tons/calendar year. [District Rule 3.4/ C-10-67]

**4. Requirement:**

The SOx emissions from the engine shall not exceed 0.1 lb/day, 1 lb/1st calendar quarter, 1 lb/2nd calendar quarter, 1 lb/3rd calendar quarter, 1 lb/4th calendar quarter, and neg. tons/calendar year. [District Rules 2.11 and 3.4/ C-10-67]

**5. Requirement:**

The PM10 emissions from the engine/grinder shall not exceed 29.2 lb/day, 243 lb/1st calendar quarter, 243 lb/2nd calendar quarter, 243 lb/3rd calendar quarter, 243 lb/4th calendar quarter, and 0.49 tons/calendar year. [District Rules 2.11 and 3.4/ C-10-67]

**6. Requirement:**

Permit condition: The Permit Holder shall not discharge into the atmosphere any air contaminant for a period or periods aggregating more than 3 minutes in any one hour which is:

- a. As dark or darker in shade than No. 1 on the Ringelmann Chart; or
- b. Greater than 20% opacity. [District Rules 2.3 and 3.4/C-10-67]

**7. Requirement:**

The horsepower-hours used shall not exceed 12,000 hp-hr/day, 100,000 hp-hr/1st calendar quarter, 100,000 hp-hr/2nd calendar quarter, 100,000 hp-hr/3rd calendar quarter, 100,000 hp-hr/4th calendar quarter, and 400,000 hp-hr/year. [District Rule 3.4/ C-10-67]

**8. Requirement:**

The engine/grinder shall be used only for grinding material which is too large to be handled by the on-site electric grinder permitted under P-61-89(a1). [District Rule 3.4/C-10-67]

**9. Requirement:**

The engine used at the site under this permit must be, at a minimum, an EPA Certified Tier II engine. [District Rule 3.4/C-10-67]

**10. Requirement:**

The Permit Holder shall provide written notification to the District at least 3 days prior to any engine operating at the site under this permit. The Permit Holder shall provide separate notification for each mobilization of engine operation. [District Rule 3.4/C-10-67]

**11. Requirement:**

The Permit Holder shall maintain a log of the operation hours for the IC engine, including the make/model of the engine, the tier certification, the duration, and date of each usage. The log shall be retained for a period of five (5) years and be made available to District personnel upon request. [District Rule 3.4/C-10-67]

**District Rule 3.8-Federal Operating Permits**

This rule implements the requirements of Title V of the Federal CAA as amended in 1990 for permits to operate. Title V provides for the establishment of operating permit programs for sources which emit regulated air pollutants, including attainment and non-attainment pollutants.

The source is in compliance with the requirements of this rule. The source currently has one proposed change for which the District is issuing an ATC, which is being processed according to the District's Enhanced NSR guidelines in District Rule 3.4, Section 404.

In accordance with District Rule 3.8, section 409, a significant permit modification requires that the District provide written notice, proposed permit, and District Analysis to the USEPA, Air Resources Board, all interested parties and agencies, and the source. The proposed permit will have a 30 day public review period and a concurrent 45 day regulatory review period.

Upon implementation of the District ATC into a PTO, the source may submit a written request for District action to amend the Title V operating permit pursuant to District Rule 3.8, section 404.1. Since the District ATC has been processed according to enhanced NSR guidelines, upon written request by the source, the District shall incorporate the changes into the Title V permit as an administrative permit amendment pursuant to District Rule 3.8, section 412.1.

**1. Requirement:**

The Permit Holder shall maintain all records on site for a period of five (5) years from the date of entry and these records shall be made readily available to District personnel upon request. [District Rule 3.8, §302.6(b)/C-10-67]

**2. Requirement:**

The permit shall require that the source allow the entry of the District, ARB, or U.S. EPA officials for the purpose of inspection and sampling, including:

- a. Inspection of the stationary source, including equipment, work practices, operations, and emissions-related activity;
- b. Inspection and duplication of records required by the permit to operate; and
- c. Source sampling or other monitoring activities. [District Rule 3.8, §302.10]

**3. Requirement:**

The Permit Holder shall comply with all Title V permit conditions. [District Rule 3.8, §302.11a]

**4. Requirement:**

The permit does not convey property rights or exclusive privilege of any sort. [District Rule 3.8, §302.11b]

**5. Requirement:**

Non-compliance with any permit condition is grounds for permit termination, revocation and reissuance, modification, enforcement action, or denial of permit renewal. [District Rule 3.8, §302.11c]

**6. Requirement:**

The Permit Holder shall not use the need to halt or reduce a permitted activity in order to maintain compliance as a defense for non-compliance with any permit condition. [District Rule 3.8, §302.11d]

**7. Requirement:**

A pending permit action or notification of anticipated non-compliance does not stay any permit condition. [District Rule 3.8, §302.11e]

**8. Requirement:**

Within a reasonable time period, the Permit Holder shall furnish any information requested by the APCO, in writing, for the purpose of

- a. Compliance with the permit; or
- b. Whether or not cause exists for a permit or enforcement action. [District Rule 3.8, §302.11f]

**9. Requirement:**

Within two weeks of an emergency event, the owner or operator shall submit to the District a properly signed contemporaneous log or other relevant evidence demonstrating that:

- a. An emergency occurred;
- b. The Permit Holder can identify the cause(s) of the emergency;
- c. The facility was being properly operated at the time of the emergency;
- d. All steps were taken to minimize the emissions resulting from the emergency; and
- e. Within two working days of the emergency event, the Permit Holder provided the District with a description of the emergency and any mitigating or corrective actions taken.

In any enforcement proceeding, the Permit Holder has the burden of proof for establishing that an emergency occurred. [District Rule 3.8, §302.12]

**10. Requirement:**

If any provision, clause, sentence, paragraph, section or part of these conditions for any reason is judged to be unconstitutional or invalid, such judgement shall not affect or invalidate the remainder of these conditions. [District Rule 3.8, §302.13]

**11. Requirement:**

The Responsible Official shall submit a compliance certification to the U.S. EPA and the APCO every twelve (12) months unless required more frequently by an applicable requirement. The twelve (12) month period will begin on January 1 and end on December 31, and will be due by January 31 for the previous reporting year, unless otherwise approved in writing by the District. All compliance reports and other documents required to be submitted to the District by the responsible official shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. [Rule 3.8 § 302.14a]



**12. Requirement:**

The compliance certification shall identify the basis for each permit term or condition (e.g., specify the emissions limitation, standard, or work practice) and a means of monitoring compliance with the term or condition consistent with Sections 302.5, 302.6, and 302.7 of Rule 3.8. [Rule 3.8 § 302.14b]

**13. Requirement:**

The compliance certification shall include a statement of the compliance status, whether compliance was continuous or intermittent, and method(s) used to determine compliance for the current time period and over the entire reporting period. [Rule 3.8 § 302.14c]

**14. Requirement:**

The compliance certification shall include any additional inspection, monitoring, or entry requirement that may be promulgated pursuant to Sections 114(a) and 504(b) of the Federal Clean Air Act. [Rule 3.8 § 302.14d]

**15. Requirement:**

The Title V permit shall expire five years from the date of issuance. Title V permit expiration terminates the stationary source's right to operate unless a timely and complete Title V permit application for renewal has been submitted. [District Rule 3.8, §302.15]

**16. Requirement:**

An owner or operator shall pay the appropriate Title V permit fees on schedule. If fees are not paid on schedule, the permit is forfeited. Operation without a permit subjects the source to potential enforcement action by the District and the U.S. EPA pursuant to Section 502(a) of the CAA. [District Rule 3.8, §302.16]

**17. Requirement:**

No permit revision shall be required under any approved economic incentives, marketable permits, emissions trading, and other similar programs or processes, for changes that are provided for in the permit. [District Rule 3.8, §302.22]

**18. Requirement:**

An owner or operator shall submit a standard District application for renewal of the Title V permit, no earlier than 18 months and no later than six months before the expiration date of the current permit to operate. [District Rule 3.8, §402.2]

**19. Requirement:**

An owner or operator shall submit a standard District application for each emissions unit affected by a proposed permit revision that qualifies as a significant Title V permit modification. The application shall be submitted after obtaining any required preconstruction permits. Upon request by the APCO, the owner or operator shall submit copies of the latest preconstruction permit for each affected emissions unit. The emissions unit(s) shall not commence operation until the APCO approves the permit revision. [District Rule 3.8, §402.3]

**20. Requirement:**

An owner or operator shall submit a standard District application for each emissions unit affected by the proposed permit revision that qualifies as a minor permit modification. The application shall be submitted after obtaining any required preconstruction permits. The emissions unit(s) shall not commence operation until the APCO approves the permit revision. In the application, the owner or operator shall include the following:

- a. A description of the proposed permit revision, any change in emissions, and additional applicable
- b. Proposed permit terms and conditions; and
- c. A certification by a responsible official that the permit revision meets criteria for use of minor permit modification procedures and a request that such procedures be used. [District Rule 3.8, §402.4]

**21. Requirement:**

Circumstances that are cause for reopening and revision of a permit include, but are not limited to, the following:

- a. The need to correct a material mistake or inaccurate statement;
- b. The need to revise or revoke a permit to operate to assure compliance with applicable federal requirements;
- c. The need to incorporate any new, revised, or additional applicable federal requirements, if the
- d. Additional requirements promulgated pursuant to Title IV as they become applicable to any acid rain unit governed by the permit. [District Rule 3.8, §413.1]

**22. Requirement:**

The Permit Holder shall record maintenance of all monitoring and support information required by any applicable federal requirement, including:

- a. Date, place, and time of sampling;
- b. Operating conditions at the time of sampling;
- c. Date, place, and method of analysis; and
- d. Results of the analysis. [District Rule 3.8, §302.6a]

**23. Requirement:**

The Permit Holder shall retain records of all required monitoring data and support information for a period of at least five years from the date of sample collection, measurement, report, or application. [District Rule 3.8, §302.6b]

**24. Requirement:**

Any deviation from permit requirements, including that attributable to upset conditions (as defined in the permit), shall be promptly reported to the APCO. For the purpose of this condition prompt means as soon as reasonably possible, but no later than 10 days after detection. [District Rule 3.8, §302.7a]

**25. Requirement:**

A semi-annual monitoring report shall be submitted at least once every six (6) consecutive calendar months and shall identify any deviation from permit requirements, including that previously reported to the APCO pursuant to Section 302.7(a) of Rule 3.8. Unless otherwise approved in writing by the District, the following shall apply:

- a. The first six (6) month monitoring period will begin on January 1 and end on June 30, and the report will be due by July 31 of the reporting year; and
- b. The second six (6) month period will begin on July 1 and end on December 31, and will be due on January 31 of the following calendar year.

**26. Requirement:**

All reports of deviation from permit requirements shall include the probable cause of the deviation and any preventive or corrective action taken. [District Rule 3.8, §302.7c]

**27. Requirement:**

Each monitoring report shall be accompanied by a written statement from the responsible official that certifies the truth, accuracy, and completeness of the report. [District Rule 3.8, §302.7e]

**District Rule 3.20-Ozone Transport Mitigation**

As documented above, the facility total potential to emit is above 10 tons per year for VOC or NOx, and therefore the post-project Stationary Source Potential to Emit (SSPE) will be calculated.

**Annual permitted emissions for the stationary source including proposed emissions**

VOC (lb)	132,580	lbs
NOx (lb)	206,733	lbs

**Annual permitted emissions for equipment which is exempt from Rule 3.4\***

VOC (lb)	500	lbs
NOx (lb)	5,300	lbs

\* From PTOs P-51-94(t), P-52-94(t) for emergency engines

**Post-project Stationary Source Potential to Emit (SSPE)**

VOC (lb)	132,080	lbs
NOx (lb)	201,433	lbs

Because the post-project SSPE is greater than 10 tons (20,000) lbs per year for VOC or NOx, per section 301.1, calculations shall be performed to determine the quantity of mitigation required, if any.

**Pre-project Stationary Source Potential to Emit (SSPE)**

VOC (lb)	131,200	lbs
NOx (lb)	197,200	lbs

**Quantity of offsets required by Rule 3.4**

VOC (lb)	882	lbs
NOx (lb)	4,233	lbs

<u>Quantity of Mitigation required by Rule 3.20</u>		
VOC (lb)	0	lbs
NOx (lb)	0	lbs

#### Title 17 CCR Section 93116-Airborne Toxic Control Measure (ATCM) for Portable Compression

##### Ignition Engines

This regulation is applicable to portable diesel-fueled engines over 50 hp.

The regulation serves to limit the emissions of diesel particulate matter from these engines.

##### **1. Requirement:**

The engine must be certified to meet one of the federal or California standards for nonroad engines. (93116.3(b)(1)(a))

**Streamlined Demonstration:** The Title 17, CCR requirement is streamlined by a District rule 3.4, New Source Review requirement. The Rule 3.4 condition requires the use of at least a Tier II certified engine.

**Streamlined Condition:** The engine used at the site under this permit must be, at a minimum, an EPA Certified Tier II engine. [District Rule 3.4/C-10-67]

##### **2. Requirement:**

The engine owner or operator shall only refuel the engine with California Air Resources Board certified diesel fuel. (93116.3(a))

##### **3. Requirement:**

The engine must meet a PM10 emission fleet average of 0.25 g/bhp-hr by January 1, 2013. (93116.3(c)(1))

**Streamlined Demonstration:** The Title 17, CCR requirement is streamlined by a District rule 3.4, New Source Review requirement. The Rule 3.4 condition requires the use of at least a Tier II certified engine. The pm10 emission factor for a Tier II certified engine is 0.15 g/bhp-hr and this engine is the only one in this "fleet", therefore this requirement is already satisfied.

**Streamlined Condition:** The engine used at the site under this permit must be, at a minimum, an EPA Certified Tier II engine. [District Rule 3.4/C-10-67]

#### NSPS Applicability-40 CFR, Part 60, Subpart IIII, Standards of Performance For Stationary Compression Ignition Internal Combustion Engines

This subpart applies to manufacturers, owners and operators of specified stationary compression engines. This is a portable compression ignition engine, therefore the subpart is not applicable.

#### NESHAP Applicability-40 CFR, Part 63, Subpart ZZZZ, National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines

This subpart applies to stationary engines. This is an application for a portable compression engine that operates on site intermittently. The subpart is not applicable since this is a portable engine.

#### District Risk Management Plan and Risk Assessment Guidelines (RMPRAG)

As required by the District's RMPRAG Policy, the project's health risk will be reviewed. The review will evaluate the Hazardous Air Pollutant (HAP) emissions, and because the engine will be installed after March 3, 2004, the risk from diesel particulate will also be quantified.

##### **1. HAP Emissions - Excluding Diesel Particulate:**

Pollutants	Emission Factor * (lb/MMBtu)	Emissions (lb/year)	Screening Level (lb/year)	Less Than Screening
Benzene	9.33E-04	2.57	6.70	Yes
Toluene	4.09E-04	1.13	38,600.00	Yes
Xylenes	2.85E-04	0.79	57,900.00	Yes
Propylene	2.58E-03	7.11	52.00	Yes
1,3-Butadiene	3.91E-05	0.11	1.10	Yes
Formaldehyde	1.18E-03	3.25	33.00	Yes
Acetaldehyde	7.67E-04	2.11	72.00	Yes
Acrolein	9.25E-05	0.26	3.90	Yes
Benz[a]anthracene	1.68E-06	0.00	0.04	Yes
Benzo[b]fluoranthene	9.91E-08	0.00	0.04	Yes
Benzo[a]pyrene	1.55E-07	0.00	0.04	Yes
Dibenz[a,h]anthracene	5.83E-07	0.00	0.04	Yes
Indeno[1,2,3-cd]pyrene	3.57E-07	0.00	0.04	Yes
Naphthalene	8.48E-05	0.23	270.00	Yes

\* Based on AP-42, Table 3.3-2 (10/96).

Since the emissions from the above HAPs are below the screening levels, no further toxic review is required of them.

##### **2. Diesel Particulate Cancer Risk Calculation:**

<u>Dispersion Data</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Residential Emission Concentration, X/Q =	33.3 $\mu\text{g}/\text{m}^3$	CR	Screen3
Worksite Emission Concentration, X/Q =	202.4 $\mu\text{g}/\text{m}^3$	CW	Screen3

\* Conservatively, the District will use the unit's maximum dispersion concentration to evaluate both the residential and worksite receptor risks. As documented, the maximum concentration occurs at XX meters from the source.

<u>Individual Cancer Risk (ICR)</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Diesel Particulate Unit Risk Factor =	3E-04 (unit-less)	UR	OEHHA
Dispersion Annualizing Factor *=	0.10 (unit-less)	AF	District
Residential, ICR =	1.901 in a million	ICR	ER*UR*CR*AF
Worksite, ICR =	7.592 in a million	ICW	(46/70)*ER*UR*CW*AF
Maximum, ICR =	7.592 in a million	Max Risk	Max (ICR, ICW)

\* The Screen3 dispersion concentration for both the residential and the worksite receptors are annualized by a factor of 0.10.

### 3. Evaluation of Best Available Control Technology for Toxic Air Contaminants\* (T-BACT):

Is T-BACT Required (Max Risk > 1 in a million): Yes

Has T-BACT been proposed for the project: Yes

Based on the T-BACT proposal and the maximum ICR value calculated, the project is: **Approvable**

As proposed the project meets the requirements of the District's RMPRAG Policy, therefore no further toxics review is required.

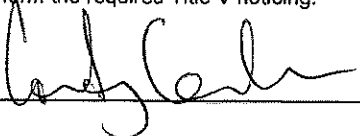
### COMMENTS:

BACT is triggered for VOC and NOx emissions. Per BACT Determination 605-1, the equipment as proposed meets the BACT requirements for this class and category of source.

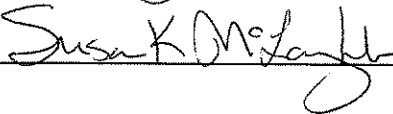
As discussed above, the application (also) meets the T-BACT requirements for this class and category of source.

### RECOMMENDATIONS:

Perform the required Title V noticing.

Engineer: 

Date: 4/1/11

Reviewed by: 

Date: 4/1/11

947 Galileo Court, Suite 103, Davis, CA 95618

## New Source Review Last Five Year Activity

SIC Code #

491

11/8/2002

Facility Name: Woodland Biomass

**Date of Initial Five Year Determination:**

11/01/2002  
10/21/2010

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**Date of Previous Five Year Determination:**

10/21/2010  
2/18/2011

**Location:** 1786 East Kentucky Ave., Woodland, CA

Date of Current Five Year Determination:

10/21/2010  
2/18/2011

List of Activities: C-10-67

Equipment	Issued Permits	Date PTO issued	ATC	Date ATC Issued	VOC (tpy)	CO (tpy)	NOx (tpy)	SOx (tpy)	PM10 (tpy)
Rice Hull Rec., Stor. and Ship.	P-34-94(t)	5/2/94	-	-	0.00	0.00	0.00	0.00	0.40
Emergency ICE	P-51-94(t)	7/19/94	-	-	0.05	0.11	0.52	0.01	0.04
Emergency Fire Pump	P-52-94(t)	7/19/94	-	-	0.01	0.03	0.14	0.00	0.01
Cooling tower	P-74-94(t)	9/30/94	-	-	0.00	0.00	0.00	0.00	0.01
Screening of Sand	P-31-94(t)	2/26/96	-	-	0.00	0.00	0.00	0.00	0.50
Hydrated Lime Stg&Mlx	P-50-94(t)	2/26/96	-	-	0.00	0.00	0.00	0.00	0.03
Fuel matrl rcvng, procs.& strg.	P-61-89(t)	2/26/96	-	-	0.00	0.00	0.00	0.00	10.43
Hydrated Lime rcvng&strg	P-90-89(t)	2/26/96	-	-	0.00	0.00	0.00	0.00	0.01
Clay/lmslne rcvng&strg	P-92-89(t)	2/26/96	-	-	0.00	0.00	0.00	0.00	0.01
Sand rcvng&strge	P-93-89(t)	2/26/96	-	-	0.00	0.00	0.00	0.00	0.01
Circulating Fluidized Bed Boiler	P-105-90(t)	6/6/02	C-00-19	05/06/02	0.00	0.00	0.00	0.00	0.00
Flyash loadout&lmslr	P-91-89(t)	1/3/03	C-02-119	12/12/2002	0.00	0.00	0.00	0.00	0.00
Fuel matrl rcvng, grind, procs.& strg.			C-08-234	5/19/2009	0.00	0.00	0.00	0.00	0.00
Circulating Fluidized Bed Boiler			C-09-124	pending	0.00	0.00	0.00	0.00	0.00
Limited Use Diesel Fired IC Engine			C-10-67	pending	0.44	1.15	2.12	0.00	0.49
<b>TOTAL</b>					<b>0.44</b>	<b>1.15</b>	<b>2.12</b>	<b>0.00</b>	<b>0.49</b>

**COMMENTS:**

These permits are sorted by date the ATC was issued. According to Rule 3.4 Section 221, a major modification is calculated based on all creditable increases and decreases from the source over the period of five consecutive years before the application, including the calendar year of the most recent application. Therefore the applicable years are February 2006 through February 2011.

The following changes were made to this worksheet from the last update (10/21/2010):

The following changes were made to this worksheet from the last update:

(1) Added Last 5 Year Aggregate Emissions from ATCs C-10-67.

**Engineer:**

Typed initials

Typed Date

**Reviewed by:**

Typed init

Typed Date

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT  
1847 Colusa Blvd, Suite 100, Colusa, CA 95925  
**New Source Review**  
Quarterly Potential To Emit Determination  
NSR Version #7198  
Evaluation to be used on existing permits to obtain their quarterly PTE.

Engineer: Courtney Graham

Facility Name: Woodland Biomass

Location: 1786 Kentucky Avenue, Woodland

CURRENT APPLICATIONS:

ATC's  
C-10-57

PTE's

SIC Code # 4911

Date of Initial Quarterly PTE Determination: 12/11/2001  
Date of Previous Quarterly PTE Determination: 10/21/2010  
Date of Current Quarterly PTE Determination: 02/14/2011

Process Description	Current Permits	VOC Emissions				CO Emissions				NOx Emissions				SOx Emissions				PM10 Emissions				Minor of Quarterly PTE Determination
		QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	
Circulating fluidized bed boiler	P-105-50(1) C-09-124	37,800	38,220	38,640	38,640	155,300	108,820	108,108	109,296	109,296	435,520	56,808	57,439	58,070	58,070	230,387	28,512	28,512	28,512	28,512	113,548	X
Screening of sand	P-31-94(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
Rice hull receiving, storage, shipping	P-34-94(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
Hydrated lime storage and mixing	P-50-94(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
Fuel material receiving, processing, and storage (excluding rice hulls)	P-61-89(a1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
Cooling tower	P-74-94(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
Hydrated lime receiving and storage	P-90-59(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
Flyash loadout and transfer	P-91-89(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
Clay limestone receiving and storage	P-92-89(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
Sand receiving and storage	P-93-89(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X
Diesel IC engine power generator	C-10-57	220	220	220	220	880	673	673	673	673	2,712	1,058	1,058	1,058	1,058	4,232	243	243	243	243	970	X
Pre-project SSPE (lb/year)		131,200				520	131,200				520	131,200				520	131,200				520	
Post-project Policy 25 PTE		38,640				155,300	109,296				435,520	58,070				230,387	28,512				113,548	
Post-project Policy 25 PTE		38,640				155,300	109,296				435,520	58,070				230,387	28,512				113,548	
Emergency IC Engine (850 BHP)		393	393	393	393	1,572	300	300	300	300	1,200	4,137	4,137	4,137	4,137	16,578	63	63	63	63	252	X
Emergency IC Engine (185 BHP)		110	110	110	110	440	251	251	251	251	1,005	1,154	1,154	1,154	1,154	4,616	17	17	17	17	68	X
Rule 3.20 Exempt Units Total PTE (lb/year)		500				500	500				500	500				500	500				500	

SUMMARY	VOC Emissions				CO Emissions				NOx Emissions				SOx Emissions				PM10 Emissions								
	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)					
Pre-project SSPE (lb/year)	131,200				520	131,200				520	131,200				520	131,200				520	131,200				520
Post-project SSPE (lb/year)	38,640				155,300	109,296				435,520	58,070				230,387	28,512				113,548	28,512				113,548
Pre-project Policy 25 PTE	38,640				155,300	109,296				435,520	58,070				230,387	28,512				113,548	28,512				113,548
Post-project Policy 25 PTE	38,640				155,300	109,296				435,520	58,070				230,387	28,512				113,548	28,512				113,548
FACILITY TOTAL PTE	38,640				155,300	109,296				435,520	58,070				230,387	28,512				113,548	28,512				113,548

Facility Policy 25 Post-Project Potential to Emit

	Quarterly				Yearly
	QTR 1 (lb)	QTR 2 (lb)	QTR 3 (lb)	QTR 4 (lb)	
VOC	38,020	38,440	38,860	39,280	154,400
CO	107,403	108,691	109,979	111,267	437,340
NOx	57,868	58,497	59,126	59,755	235,246
SOx	28,513	28,820	29,127	29,434	115,900
PM10	24,771	25,037	25,301	25,564	100,673

Post-Project Stationary Source Potential to Emit (SSPE)

	Quarterly				Yearly
	QTR 1 (lb)	QTR 2 (lb)	QTR 3 (lb)	QTR 4 (lb)	
VOC	132,080	132,080	132,080	132,080	528,320
NOx	201,433	201,433	201,433	201,433	805,732

OFFSET THRESHOLDS

	Quarterly				Yearly
	QTR 1 (lb)	QTR 2 (lb)	QTR 3 (lb)	QTR 4 (lb)	
VOC	7,500	7,500	7,500	7,500	30,000
CO	49,600	49,600	49,600	49,600	198,400
NOx	7,500	7,500	7,500	7,500	30,000
SOx	13,650	13,650	13,650	13,650	54,600
PM10	13,650	13,650	13,650	13,650	54,600

PTE Comparison to NSR Triggers

	Quarterly				Annual
	QTR 1 (lb)	QTR 2 (lb)	QTR 3 (lb)	QTR 4 (lb)	
VOC	38,020	38,440	38,860	39,280	154,400
CO	107,403	108,691	109,979	111,267	437,340
NOx	57,868	58,497	59,126	59,755	235,246
SOx	28,513	28,820	29,127	29,434	115,900
PM10	24,771	25,037	25,301	25,564	100,673

MITIGATION THRESHOLDS


	Quarterly				Yearly
	QTR 1 (lb)	QTR 2 (lb)	QTR 3 (lb)	QTR 4 (lb)	
VOC	7,500	7,500	7,500	7,500	30,000
CO	49,600	49,600	49,600	49,600	198,400
NOx	7,500	7,500	7,500	7,500	30,000
SOx	13,650	13,650	13,650	13,650	54,600
PM10	13,650	13,650	13,650	13,650	54,600

SSPE Comparison to Rule 3.20 Triggers

	Quarterly				Annual
	QTR 1 (lb)	QTR 2 (lb)	QTR 3 (lb)	QTR 4 (lb)	
VOC	132,080	132,080	132,080	132,080	528,320
NOx	201,433	201,433	201,433	201,433	805,732

COMMENTS: The following changes were made to this PTE worksheet from the last update (2/14/11):  
(1) Emissions were added for ATCs C-10-57.

Engineer: CG

Reviewed by: 

Date: 4/1/11

Date: 4/1/11

## BACT DETERMINATION 605-1

**Emissions Unit:** Diesel fired IC Engine, Portable, Limited Use  
**Rating:** 1,000 HP  
**Industry Type:** Electric Power Production

**Facility Name:** Woodland Biomass Power, Ltd.  
**Mailing Address:** PO Box 1560, Woodland, CA

**Contact Name:** Mr. Mike Blakey, Manager  
**Telephone:** (530) 661-6095

**Engineer:** Courtney Graham  
**Date:** March 24, 2011

**Application #:** C-10-67

**I. Proposal:** The applicant is proposing to permit a portable diesel fired IC engine for limited use. The engine will operate for a limited number of days per quarter at the site, then leave the site. The engine will be rented from a third party.

**II. Applicability:** The proposed emissions for the engine are shown below.

Component	VOC	CO	NO <sub>x</sub> (as NO <sub>2</sub> )	SO <sub>x</sub> (as SO <sub>2</sub> )	PM <sub>10</sub>
Proposed Engine Emissions	26.5 lb/day	68.8 lb/day	127.0 lb/day	0.1 lb/day	4.0 lb/day
Proposed Grinder Emissions	- lb/day	- lb/day	- lb/day	- lb/day	25.2 lb/day
Total Process Emissions	26.5 lb/day	68.8 lb/day	127.0 lb/day	0.1 lb/day	29.2 lb/day
Rule 3.4, Section 301.1 Triggers	10.0 lb/day	250.0 lb/day	10.0 lb/day	80.0 lb/day	80.0 lb/day

The proposed engine is a new emissions unit and the proposal results in an increase in the quarterly PTE for VOC, CO, NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>10</sub> pollutants. As shown above, BACT is not triggered for CO, SO<sub>x</sub>, and PM<sub>10</sub>, since the proposed emissions for the engine do not exceed the daily BACT trigger levels specified by Rule 3.4, Section 301.1. BACT is triggered for the engine's VOC and NO<sub>x</sub> emissions, since the proposed daily emissions exceed the BACT trigger level specified by Rule 3.4, Section 301.1, and the application results in a quarterly increase in the PTE for the pollutant.

### III. Top-down BACT Analysis VOC:

A. Identify all control technologies

Option 1: Electrification

Option 2: Natural Gas/LPG Engine

Option 3: Tier II certified engine

**B. Eliminate Technologically Infeasible Options**

Option 1: Technologically Feasible

Option 2: Due to a lack of portable Natural Gas and LPG engines in the 1,000 Hp range, this option is not technologically feasible.

Option 3: Technologically Feasible

**C. Rank Remaining Control Technologies by Control Effectiveness**

Control Technology	Efficiency	Achieved in Practice (Yes / No)
Option 1	100%	No
Option 2	N/A	No
Option 3	N/A	Yes

**D. Cost Effective Analysis**

See Below, Section IV. D.

**E. Select BACT**

See Below, Section IV. E.

**IV. Top-down BACT Analysis NO<sub>x</sub>:**

**A. Identify all control technologies**

Option 1: Electrification

Option 2: Natural Gas/LPG Engine

Option 3: Selective Catalytic Reduction (SCR)

Option 4: Tier II certified engine

**B. Eliminate Technologically Infeasible Options**

Options 1 and 4 have been shown to be technologically feasible.

Option 2: Due to a lack of portable Natural Gas and LPG engines in the 1,000 Hp range, this option is not technologically feasible.



Option 3: Due to the portable nature of the engine, this option is not technologically feasible

C. Rank Remaining Control Technologies by Control Effectiveness

Control Technology	Efficiency	Achieved in Practice (Yes / No)
Option 1	100%	No
Option 4	N/A	Yes

D. Cost Effective Analysis

To annualize a capital cost, the following formula is used:

$A = P * ((i * (1 + i)^n) / (1 + i)^n - 1))$ , where:

A = annualized capital cost of the control equipment

P = present capital cost of the control equipment

i = interest rate (use 10% unless alternate can be documented to representative)

n = Equipment life (use 10 years unless alternate can be documented)

I. Option 1 (VOC and NOx), Electrification:

a.  $A = \$1,800,000 * ((0.1 * (1 + 0.1)^{10}) / (1 + 0.1)^{10} - 1))$   
= \$292,941

b. Annual operating costs = \$0

c. Total annual costs = \$292,941/year

d. VOC and NOx cost effectiveness =

$$(0.44 \text{ tons/year VOC} * \$17,500/\text{ton}) + (2.12 \text{ tons/year NOx} * \$24,500/\text{ton}) = \$59,640/\text{year}$$

The cost for this control option exceeds the VOC and NOx cost effectiveness threshold, therefore this option is not cost effective.

E. Select BACT

The control technology option with the lowest emission concentration that is both feasible and achieved in practice for this source category is VOC option 3 (which is the same as NOx option 4), a Tier II certified engine. Therefore, a Tier II certified engine will be required as BACT.

03/23/11  
13:31:06\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

## C-10-67 woodland Biomass

## SIMPLE TERRAIN INPUTS:

```

SOURCE TYPE           =          POINT
EMISSION RATE (G/S)   =          1.00000
STACK HEIGHT (M)      =          2.4384
STK INSIDE DIAM (M)   =          0.2012
STK EXIT VELOCITY (M/S) =          78.4455
STK GAS EXIT TEMP (K) =          791.4833
AMBIENT AIR TEMP (K)  =          293.1500
RECEPTOR HEIGHT (M) =          1.3000
URBAN/RURAL OPTION    =          RURAL
BUILDING HEIGHT (M)   =          0.0000
MIN HORIZ BLDG DIM (M) =          0.0000
MAX HORIZ BLDG DIM (M) =          0.0000

```

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = 4.902 M\*\*4/S\*\*3; MOM. FLUX = 23.066 M\*\*4/S\*\*2.

## \*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	73.02	2.42	2.39	NO
100.	188.0	4	20.0	20.0	6400.0	5.97	8.24	4.73	NO
200.	128.8	4	10.0	10.0	3200.0	9.50	15.69	8.74	NO
300.	93.90	4	5.0	5.0	1600.0	16.55	22.97	12.75	NO
400.	78.31	4	5.0	5.0	1600.0	16.55	29.73	15.79	NO
500.	65.65	4	4.0	4.0	1280.0	20.08	36.50	18.98	NO
600.	56.58	4	3.5	3.5	1120.0	22.60	43.10	21.98	NO
700.	49.85	4	3.0	3.0	960.0	25.96	49.65	24.96	NO
800.	44.45	4	2.5	2.5	800.0	30.67	56.16	27.97	NO
900.	40.35	4	2.5	2.5	800.0	30.67	62.41	30.55	NO
1000.	36.63	4	2.0	2.0	640.0	37.73	68.87	33.64	NO
1100.	34.00	4	2.0	2.0	640.0	37.73	74.99	35.58	NO
1200.	31.99	6	1.5	1.5	10000.0	39.05	41.36	18.83	NO
1300.	33.37	6	1.5	1.5	10000.0	39.05	44.29	19.51	NO
1400.	34.54	6	1.0	1.0	10000.0	44.34	47.58	21.01	NO
1500.	35.93	6	1.0	1.0	10000.0	44.34	50.47	21.64	NO
1600.	37.10	6	1.0	1.0	10000.0	44.34	53.35	22.27	NO
1700.	38.06	6	1.0	1.0	10000.0	44.34	56.23	22.90	NO
1800.	38.84	6	1.0	1.0	10000.0	44.34	59.09	23.51	NO
1900.	39.44	6	1.0	1.0	10000.0	44.34	61.95	24.12	NO
2000.	39.89	6	1.0	1.0	10000.0	44.34	64.79	24.72	NO
2100.	39.93	6	1.0	1.0	10000.0	44.34	67.62	25.23	NO
2200.	39.89	6	1.0	1.0	10000.0	44.34	70.45	25.74	NO
2300.	39.77	6	1.0	1.0	10000.0	44.34	73.26	26.23	NO
2400.	39.60	6	1.0	1.0	10000.0	44.34	76.07	26.72	NO

c1067.OUT									
2500.	39.37	6	1.0	1.0	10000.0	44.34	78.86	27.20	NO
2600.	39.09	6	1.0	1.0	10000.0	44.34	81.65	27.68	NO
2700.	38.78	6	1.0	1.0	10000.0	44.34	84.42	28.14	NO
2800.	38.44	6	1.0	1.0	10000.0	44.34	87.19	28.61	NO
2900.	38.07	6	1.0	1.0	10000.0	44.34	89.95	29.06	NO
3000.	37.68	6	1.0	1.0	10000.0	44.34	92.70	29.51	NO
3500.	35.15	6	1.0	1.0	10000.0	44.34	106.33	31.36	NO
4000.	32.74	6	1.0	1.0	10000.0	44.34	119.77	33.08	NO
4500.	30.49	6	1.0	1.0	10000.0	44.34	133.04	34.70	NO
5000.	28.44	6	1.0	1.0	10000.0	44.34	146.16	36.24	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:  
 77. 202.4 4 20.0 20.0 6400.0 5.97 6.55 3.81 NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\*\*\*  
 \*\*\* SCREEN DISCRETE DISTANCES \*\*\*  
 \*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES \*\*\*

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
6.	0.4921E-10	4	20.0	20.0	6400.0	5.97	0.71	0.57	NO
1294.	33.30	6	1.5	1.5	10000.0	39.05	44.12	19.47	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)  
 DWASH=NO MEANS NO BUILDING DOWNWASH USED  
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED  
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED  
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3\*LB

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	202.4	77.	0.